IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
RICHMOND DIVISION

SAMSUNG ELECTRONICS CO., LTD., and SAMSUNG ELECTRONICS AMERICA, INC., Plaintiffs, v. NVIDIA CORPORATION, OLD MICRO, INC. F/K/A VELOCITY MICRO, INC., AND VELOCITY HOLDINGS, LLC, Defendants.	CIVIL ACTION NO. 3:14-cv-00757-REP

PLAINTIFFS' MEMORANDUM IN OPPOSITION TO DEFENDANTS' MOTION FOR JUDGMENT ON THE PLEADINGS UNDER 35 U.S.C. § 101

TABLE OF CONTENTS

TABLE OF AUTHORITIES

Page

CASES

TABLE OF AUTHORITIES
(continued)

Page

STATUTES

I. INTRODUCTION

Plaintiffs Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc. ("Samsung") are leaders in the field of computer main memory, known as Synchronized Dynamic Random Access Memory ("SDRAM"). SDRAM has evolved over the years, both in capacity and in speed, and this evolution has been accompanied by the development of what are known as "memory controllers," which allow computer processors to interact with SDRAM. Many of the improvements to both SDRAM and memory controllers have been contributed by Samsung, including the invention of U.S. Patent No. 6,262,938 ("the '938 Patent"), which is the subject of this motion. The claims of the '938 Patent describe systems and methods for increasing bandwidth of memory controllers by controlling specific timing values within an SDRAM—a process unique to computers and computer technology.

In challenging these claims as unpatentable as a matter of law, Defendants inaccurately summarize the patent for their own benefit and rely entirely on their characterization of the supposed "heart" or "nub" of the invention, rather than on the detailed claim language. This is not a surprising strategy; on their face, the asserted claims of the '938 Patent disclose concrete method steps, and elements of an apparatus, to innovatively control computer memory. But even indulging their summary description of the invention, Defendants misapply the Supreme Court's two-part test under 35 U.S.C. § 101 for distinguishing patent-eligible subject matter from mere "abstract ideas," discussed most recently in *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347, 2355 (2014). *Alice*, for example, made clear that "[a]t some level, 'all inventions . . . embody, use, reflect, rest upon, or apply laws of nature, natural phenomena, or abstract ideas.'" *Id.* at 2354 (quoting *Mayo Collaborative Servs. v. Prometheus Labs., Inc.*, 132 S. Ct. 1289, 1293 (2012)). The Supreme Court has thus cautioned against applying this principle too broadly, lest it "swallow all of patent law." *Alice*, 134 S. Ct. at 2354. Stated simply, an invention "is not

rendered ineligible for patent simply because it involves an abstract concept." *Id.* (citing *Diamond v. Diehr*, 450 U.S. 175, 187 (1981)).

Defendants' motion does not acknowledge this. Instead, it assumes that all Defendants need do to prevail is point out that portions of the '938 Patent "perform[] a simple arithmetic computation." (Defs.' Mem. in Supp. of Their Mot. for J. on the Pleadings of Invalidity Under 35 U.S.C. § 101 ("Defs.' Br."), D.I. 232 at 3.) But "a process is not unpatentable simply because it contains a law of nature or a mathematical algorithm," since "an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection." *Mayo*, 132 S. Ct. at 1293-94 (citing *Diehr*, 450 U.S. at 187) (internal citations and quotation marks omitted). The Supreme Court confirmed the limits of a § 101 challenge in *Alice*, holding that an invention that involves an abstract concept is patentable so long as it applies such a concept to a "new and useful end" or integrates the "building blocks [of human ingenuity] into something more." *Alice*, 134 S. Ct. at 2354.

As shown below, this Court need not even reach that far. The '938 Patent claims exactly the type of subject matter intended for protection under the Patent Act. Under the Federal Circuit's recent holding in *DDR Holdings, LLC v. Hotels.com, LP*, 773 F.3d 1245 (Fed. Cir. 2014)—notably uncited in Defendants' brief—claims like those in the '938 Patent are patentable under the *Alice* framework because they are "necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks." *Id.* at 1257. Defendants' motion, which ignores *DDR* and the other post-*Alice* cases most applicable to the '938 Patent, both misapplies the law and mischaracterizes the invention. It should be denied.

II. FACTUAL BACKGROUND

On November 4, 2015, Samsung filed its complaint alleging infringement of eight patents by Defendants. (*See* D.I. 1.) Of the eight patents that were originally asserted in this case, only

one is the subject of this motion—U.S. Patent No. 6,262,938 ("the '938 Patent"), entitled "Synchronous DRAM having posted CAS latency and method for controlling CAS latency." The '938 Patent was filed on March 3, 2000, and it claims priority to two Korean Applications, Nos. 99-6939 and 99-20821, filed on March 3, 1999 and June 5, 1999, respectively. The '938 Patent is the only patent at issue in this case on which Defendants have not filed a petition for *inter partes* review with the U.S. Patent and Trademark Office.

The '938 Patent claims specific systems and methods for increasing the bandwidth of a computer's memory controller by permitting SDRAM in the computer to delay read commands to meet the timing requirements of the SDRAM's operating parameters. The invention is applicable specifically to memory systems that allow control of an SDRAM by another device, such as a memory controller. The '938 Patent's specification describes the relevant operation of SDRAM and the invention. SDRAM contains a memory bank having a plurality of memory cells arranged in rows and columns and is synchronized with a clock signal. ('938 Patent at 2:6-31.) The specification defines specific timing parameters that are key to the invention and to the operation of SDRAM:

- The number of clock cycles of the clock signal from the application of a row access command to the output of first data is called the RAS latency (RL).
- The number of clock cycles of the clock signal from the application of a column access command to the output of the first data is called the CAS latency (CL).
- The number of clock cycles of the clock signal from the application of the row access command to the application of the column access command with respect to the same memory bank is called the RAS-CAS latency (RCL).
- The number of clock cycles of the clock signal from the application of the row access command to the point of time at which the sense amplifier is enabled are determined is called SAE.

('938 Patent at 2:6-31, 3:21-29.)

An SDRAM has minimum numbers of clock cycles associated with each of these timing

values. For example, RLmin is the minimum number of clock cycles that must elapse from the time a row access command is applied to the output of data. Similarly, CLmin is the minimum number of clock cycles that must elapse from the time a column access command is applied to the output of data. SAE is the number of clock cycles of the clock signal from the application of the row access command to the time when the sense amplifier, which amplifies data as it is being read, is enabled. Finally, RCLmin is the minimum number of clock cycles that must elapse between the application of a row access command to the application of a column access command. ('938 Patent at 2:6-31, 3:21-29.) Different types of SDRAM may have different operating parameters, meaning that timings such as RCLmin may vary across devices.

In a conventional SDRAM, RCL must be equivalent to or greater than RCLmin for the SDRAM to function properly. The '938 Patent claims a particular method and system that permits a memory controller to send early commands to the SDRAM and the SDRAM to delay those commands internally to allow sufficient time between each command. This is a mode of operation of an SDRAM known as "posted CAS mode." Claim 23 is an example of this innovation:

> 23. A method of controlling CAS latency of an SDRAM, synchronized with a clock signal, that includes a memory bank having a plurality of memory cells arranged in rows and columns and outputs the data of a selected memory cell, the method comprising:
>
> inputting a quantity (RLmin−CLmin) from the outside of the SDRAM, where RLmin is the minimum number of clock cycles of the clock signal required from the application of a row access command to the output of the data of the selected memory cell, and CLmin is the minimum number of clock cycles of the clock signal required from the application of a column access command to the output of the data of the selected memory cell;
>
> comparing RCL with (RLmin−CLmin), where RCL is a number of clock cycles of the clock signal from the application of a row access command to the application of a column access command with respect to the memory bank;

> determining CAS latency, which is the number of clock cycles of the clock signal required from the application of the column access command to the output of the data, to be (RLmin−RCL) when RCL is less than (RLmin−CLmin); and
>
> determining the CAS latency to be CLmin when RCL is no less than (RLmin−CLmin).

('938 Patent, claim 23.)

The other claims, while similar in their disclosure of methods or systems for the use of posted CAS mode, differ in their approach to solving these timing issues. Claim 8, on which asserted claim 17 depends, claims a system that permits a posted CAS operation and that includes various computer components, including a shift register and a decoder, and also incorporates the SAE timing requirement. ('938 Patent at claim 8, 2:9-29.) Claim 19 discloses a memory bank and a decoder that utilize the various timing parameters of the SDRAM to receive commands to return data and to allow the use of a posted CAS operation. (*Id*. at claim 19, 4:37-56.) Claim 24 is a method claim similar to claim 23 but includes the SAE timing requirement disclosed in claim 8. (*Id*. at claim 24, 5:42-67.) Dependent claims 17 and 20 require the input of either the delay clock signal, which applies the necessary delay, or the input of the timing value RLmin-CLmin, from outside the SDRAM. (*Id*. at claims 17, 20; 4:24-25, 4:55-56.)

Importantly (but never mentioned in Defendants' brief), the parties agreed as part of claim construction that the preambles of all asserted independent claims, except for that of claim 19, are limitations. (Samsung's Claim Constr. Br. (D.I. 208) at 21.) Thus, claims 17, 23, and 24 are expressly limited to an SDRAM. And while the preamble of claim 19 has been found not to be a limitation (Claim Constr. Or. (D.I. 222) at 3), that claim—like the others in the '938 Patent—is specifically directed to computer memory systems that may include a memory controller and an SDRAM, with its constituent components such as a memory bank having memory cells arranged in rows and columns.

The '938 Patent therefore does not merely claim a mathematical algorithm or any other abstract idea. Instead, the patent claims a particular method and system for determining the proper timings for sending commands to the SDRAM from a device such as the memory controller to optimize the bandwidth of a computer memory system. The claims include timings, such as RLmin, CLmin, SAE, RCL, RCLmin, and CAS latency, each of which has various mathematical relationships with one another. The claims apply these mathematical relationships to various computer system requirements, such as the input of certain quantities and the determination of other quantities, to allow an SDRAM to receive and process additional commands in a shorter amount of time.

III. ARGUMENT

Section 101 of the Patent Act defines patent-eligible subject matter: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." 35 U.S.C. § 101. The Supreme Court has recognized three specific exceptions to the Patent Act's subject matter eligibility requirements: "laws of nature, physical phenomena, and abstract ideas." *Bilski v. Kappos*, 561 U.S. 593, 594 (2010). The primary concern that drives this exclusionary principle is one of preemption—that is, that "patent law not inhibit further discovery by improperly tying up the future use of these building blocks of human ingenuity." *Alice*, 134 S. Ct. at 2354. But where the claims do not attempt to preempt every application of an idea, such claims are patentable. *DDR*, 773 F.3d at 1259.

A. Legal Standards for Proving Invalidity Under § 101

The Supreme Court has established a two-step test for evaluating patent eligibility under § 101, neither of which step Defendants have satisfied. First, Defendants have failed to establish that any of the asserted claims of the '938 Patent "are directed to a patent-ineligible concept."

Alice, 134 S. Ct. at 2355. Second, even if they could prove that one of the challenged claims is directed to an abstract idea, Defendants have not shown that the challenged claim elements—"both individually and as an ordered combination"— lack an "inventive concept" that would "ensure that the patent in practice amounts to significantly more than a patent upon the ineligible concept." *Id*.

In attempting to meet the Supreme Court's two-part test, Defendants bear a heavy burden. Patents are presumed valid, meaning that the standard of proof for invalidity is clear and convincing evidence. *See, e.g.*, *Golden Blount, Inc. v. Robert H. Peterson Co.*, 365 F.3d 1054, 1058 (Fed. Cir. 2004); *Zoltek Corp. v. United States*, No. 96–166 C, 2014 WL 1279152, at *3 (Fed. Cir. Mar. 31, 2014). The Federal Circuit has held that this high standard applies to motions under § 101, and district courts have followed suit. *Ultramercial, Inc. v. Hulu, LLC* ("*Ultramercial I*"), 722 F.3d 1335, 1342 (Fed. Cir. 2013) (vacated and remanded on other grounds) ("[A]ny attack on an issued patent based on a challenge to the eligibility of the subject matter must be proven by clear and convincing evidence"); *see also Trading Techs. Int'l, Inc. v. CQG, Inc.*, No. 05-cv-4811, 2015 U.S. Dist. LEXIS 22039, at *7-8 (N.D. Ill. Feb. 24, 2015) (noting 35 U.S.C. § 282 provides that patents are presumed valid and concluding that "until the Federal Circuit or the United Supreme Court mandates otherwise, CQG must show by clear and convincing evidence that the patents-in-suit claim patent-ineligible subject matter"). This heightened standard means that the bulk of the "evidence" Defendants rely on—unsupported attorney argument and out-of-context citations to briefs filed during claim construction—is particularly insufficient for a finding of invalidity under § 101.

B. Defendants Fail to Establish That Any Claim Is Directed to an Abstract Idea Under the First *Alice* Step

Defendants fail the first step of the *Alice* test because they cannot establish that the

challenged claims are directed to an abstract idea or that preemption applies. Defendants' argument that the asserted patent claims are merely directed to the "abstract idea of delaying" in the technological context is fundamentally flawed, because it is based entirely on Defendants' own summary-level characterization of the '938 Patent rather than the actual language of the claims.[1] *See DDR*, 773 F.3d at 1257. And Defendants do not even address, much less demonstrate, whether the '938 Patent preempts any fundamental practice, a point that the Supreme Court has emphasized as the primary motivation for § 101. *Alice*, 134 S. Ct. at 2354 ("We have described the concern that drives this exclusionary principle as one of pre-emption.").

1. Defendants Fail to Show That the '938 Patent Claims Are "Directed to" an Abstract Idea

As the Supreme Court held in *Alice*, a patent is not invalid simply for ***involving*** an abstract concept. 134 S. Ct. at 2354. Instead, a patent must be ***directed*** to an abstract idea. *Id.* at 2355; *see also DDR*, 773 F.3d at 1257. The Federal Circuit's holding in *DDR* provides the most relevant guidance on the proper application of the first step of the *Alice* test to the present case, as the claims at issue in that case were concrete, technical, and rooted in computer technology, as are the '938 Patent claims. In *DDR*, the challenged claims recited "systems and methods of generating a composite web page that combines certain visual elements of a 'host' website with content of a third-party merchant." 773 F.3d at 1248. The Federal Circuit applied the first step of the *Alice* test and noted that the claims at issue did not cover a "plainly identifiable" abstract idea such as a mathematical algorithm or a "fundamental economic or longstanding commercial practice." *Id.* at 1256-57. Instead, the claims addressed a business challenge "particular to the Internet"—that is, the retention of website visitors that would otherwise be transported away from a host's website after clicking on a third party's advertisement. *Id*. at 1257. The *DDR*

[1] In fact, and as discussed in detail below, Defendants avoid entirely the specific elements of all the asserted claims except the one—claim 19—they unilaterally declare to be "exemplary."

court described the relevant patent claims as follows:

> [U]pon the click of an advertisement for a third-party product displayed on a host's website, the visitor is no longer transported to the third party's website. Instead, the patent claims call for an "outsource provider" having a web server which directs the visitor to an automatically-generated hybrid web page that combines visual "look and feel" elements from the host website and product information from the third-party merchant's website related to the clicked advertisement. In this way, rather than instantly losing visitors to the third-party's website, the host website can instead send its visitors to a web page on the outsource provider's server that 1) incorporates "look and feel" elements from the host website, and 2) provides visitors with the opportunity to purchase products from the third-party merchant without actually entering that merchant's website.

Id. at 1257-58. Based on these concrete technical steps, the court found that the challenged claims were not directed to an abstract "fundamental economic or longstanding commercial practice." *Id*.

Just like the claims at issue in *DDR* and other post-*Alice* cases rejecting patentability challenges under § 101, the asserted claims of the '938 Patent reference a specific solution (permitting early commands that are subsequently delayed in the SDRAM by inputting and determining specific timing values in an SDRAM) to an identified problem (increasing memory bandwidth in a memory controller). *See, e.g.*, *Execware, LLC v. BJ's Wholesale Club, Inc*., 2015 U.S. Dist. LEXIS 92127, at *11 (D. Del. July 15, 2015). For example, claim 23 of the '938 Patent "determin[es] CAS latency . . . to be (RLmin−RCL) when RCL is less than (RLmin−CLmin); and determining the CAS latency to be CLmin when RCL is no less than (RLmin−CLmin)." By determining CAS latency to be different values depending on whether delay needs to be added to a command for an SDRAM to work properly, the '938 Patent provides a solution of allowing a memory controller to send commands earlier than the SDRAM is able to handle them. This solution is one "rooted in computer technology in order to overcome a problem specifically arising in the realm of computers." *Id.* at *35-36 (citing *DDR*, 773 F.3d at 1257).

It is precisely these types of claims—claims that are "not infused with language referencing a generic business practice that is unmoored from any particularized, concrete application," *Execware*, 2015 U.S. Dist. LEXIS 92127, at *35-36—that post-*Alice* courts have found patentable under the first step of the test. In *Execware*, the patent claims related to methods and systems involving the use of a "query dialog box" to filter and sort data from a computer database. *Id.* at *5. An exemplary method claim disclosed "a user interface that allows a user to construct a query to search a database or other collection of text-based information" by claiming particular characteristics of a query dialog box, permitting a user to designate values for search parameters and a sort order in the displayed box, and a computer actually performing the query and sorting the results. *Id.* at *21-24. While the claim included certain abstract ideas, such as those of displaying, classifying, and organizing information, the most important aspect of the invention was not these ideas, but instead "the creation of an improved user interface for interacting with database and spreadsheet programs on a computer." *Id.* at *42. Since the claim described that interface with sufficient particularity, it was not directed to an abstract idea. *Id.* As described above, the '938 Patent describes its claimed SDRAM improvements in the claims in a similarly particular manner.

Even Defendants acknowledged at the technology tutorial that the '938 Patent is not directed to an abstract idea. Defendants repeatedly described the '938 Patent as requiring specific timing values to be input into an SDRAM from another device, such as a memory controller, and, based on those memory timings, the CAS latency of the SDRAM is determined: "The solution of the '938 Patent is a very particular way of permitting the controller to send commands even though they're too early but to delay them internally so that the time interval,

the latency requirements are met." (D.I. 184 ("Tech Tr.") at 168:11-15.)[2] Defendants went on to describe the '938 Patent claims as "a very, very narrow and specific way to deal with these inherent time delays in SDRAM." (*Id*. at 170:23-171:3.) Defendants also described the '938 Patent invention as "a smarter SDRAM" that is "not just a memory bank" but "a memory bank that has some delay circuitry in it." (*Id.* at 174:6-11.) Defendants have therefore acknowledged that the '938 Patent is directed to improvements in SDRAM—in fact, what they describe as a "smarter SDRAM"—and related memory systems that go beyond "conventional" components.

Defendants now do a complete about-face and characterize the '938 Patent as simply the "abstract concept of delaying a second action, as necessary, to ensure a certain amount of time has passed after a first action." (Def. Br. at 12.) But this is merely attorney argument, reflecting the fact that "any claim, described at a certain level of generality, can be challenged as directed to an abstract idea." *Fairfield Indus., Inc. v. Wireless Seismic, Inc*., No. 4:14-cv-2972, 2014 WL 7342525, at *4 (S.D. Tex. Dec. 23, 2014). Further, such a description is improperly "detached from the specificity and plain language of the claimed invention, and the overall intrinsic evidence pertaining to the patent." *Intellectual Ventures I LLC v. Capital One Fin. Corp.*, No. PWG-14-111, 2015 U.S. Dist. LEXIS 62601, at *26-27 (D. Md. May 12, 2015). Defendants' high-level description of the claims, divorced from both the claim language and the specification that describe the actual invention of the '938 Patent, is rhetoric rather than evidence.

Defendants point to several cases, including the Supreme Court's holdings in *Gottschalk v. Benson*, 409 U.S. 63 (1972), and *Parker v. Flook*, 437 U.S. 584 (1978), in an attempt to bolster their contention that the '938 Patent discloses only an abstract idea. But none of these cases

[2] Although Defendants filed their motion under Federal Rule of Civil Procedure 12(c), their brief refers to and relies upon numerous documents outside the pleadings, including the transcript of the parties' technology tutorial hearing, Samsung's claim construction brief, and illustrations and descriptions that appear nowhere in the '938 Patent or in the pleadings. Samsung therefore similarly refers to Defendants' prior briefs and arguments here.

applies here. In *Benson*, the claims related to a "method of programming a general-purpose digital computer to convert signals from binary-coded decimal form into pure binary form," which essentially was patenting the algorithm itself. 409 U.S. at 65. And in *Flook*, the court considered a patent claiming a method for monitoring operation conditions during a catalytic conversion process and signaling an alarm if any process variables exceed a predetermined "alarm limit." 437 U.S. at 585. The '938 Patent, unlike the patents in *Benson* and in *Flook*, does not merely claim a mathematical formula or algorithm, and its asserted claims do not cover all uses of any of the disclosed mathematical formulas. Instead, the claims cover only the use of specific mathematical formulas applied to specific conditions in computer systems with SDRAM, specifically with the particular timings—RLmin, CLmin, RCLmin, and others—that are used in SDRAM devices.

Similarly inapplicable are the Federal Circuit's holdings in *Ultramercial, Inc. v. Hulu, Ltd.* ("*Ultramercial II*"), 772 F.3d 709 (Fed. Cir. 2014) (petition for rehearing en banc denied, Feb. 20, 2015), and *Content Extraction & Transmission LLC v. Wells Fargo Bank, Nat'l Ass'n*, 776 F.3d 1343 (Fed. Cir. 2014). In *Ultramercial II*, the court held unpatentable a "method for distributing copyrighted media products over the Internet where the consumer receives the . . . product at no cost in exchange for viewing an advertisement and the advertiser pays for the copyrighted content." 772 F.3d at 712. The court held that the claims were drawn to the abstract idea of using "an advertisement as an exchange or currency," and the claim limitations did not transform the abstract idea into patent-eligible subject matter. *Id*. at 714-15. In *Content Extraction*, the Federal Circuit held that the asserted patents, which claimed a method of extracting and digitizing data from hard copy documents, recognizing specific information in the data, and storing that information in memory, were not patent-eligible subject matter. 776 F.3d

at 1351. The court found that none of the asserted claims amounted to "significantly more" than "the abstract idea of extracting and storing data from hard copy documents using generic scanning and processing technology." *Id.* at 1349. Both cases relate to claims that were drawn to abstract ideas implemented on the Internet or through computers. Unlike this case, none of the claims at issue were rooted in specific technology (such as SDRAM devices) to overcome a specific problem (sending and handling commands early from a memory controller to an SDRAM). *See Execware*, 2015 U.S. Dist. LEXIS 92127, at *35.

Especially when construed in the light most favorable to the patentee, the asserted claims set forth "a sufficiently articulated structure that solves a problem with the computers of the prior art, such that it is not directed to an abstract idea." *Id.* at *36.

2. Defendants Fail to Show That the '938 Patent Claims Preempt a Fundamental Practice

In determining whether a claim is unpatentably abstract under § 101, courts also analyze whether the claim broadly preempts a fundamental practice. *See, e.g.*, *DDR*, 773 F.3d at 1259 (affirming validity of claims that do not "preempt every application of the idea of increasing sales by making two web pages look the same"). Under the preemption analysis of § 101, Defendants must demonstrate that the asserted claims of the '938 Patent attempt to exclude others from practicing the claimed functionality in every application. For example, in *Messaging Gateway Solutions, LLC v. Amdocs, Inc.*, No. 14-732-RGA, 2015 U.S. Dist. LEXIS 49408 (D. Del. Apr. 15, 2015), the court found that the asserted claim, which related to a system permitting a computer to receive and translate SMS text messages, contained "meaningful limitations that prevent it from preempting the abstract idea of receiving, translating, and delivering a message" and "is limited to SMS text messages between a mobile device and the Internet." *Id.* at *17

(analyzing preemption in the context of the second *Alice* step).[3] Defendants have not established that the scope of the '938 Patent claims covers all delay of any kind; nor do they establish that the '938 Patent even covers all delay within or related to an SDRAM. In fact, Defendants fail to address—let alone prove—that the claimed invention of the '938 Patent preempts all use of the alleged abstract idea.

Defendants liken the invention of the '938 Patent to situations such as children waiting 30 minutes after eating to go swimming, or a patient waiting a certain amount of time after eating to take medication. (Def. Br. at 15.) But as discussed above, Defendants' description of the claims in this high-level manner, divorced from the actual claim language, is not evidence. *Fairfield Indus.*, 2014 WL 7342525, at *4. The '938 Patent claims are specifically directed to the control of CAS latency in an SDRAM. They do not cover the broad concept of general delay or apply to any context other than computer memory. And even if the claims include well-known mathematic equations as part of their limitations, the Supreme Court has held that a patent on the use of such equations in conjunction with other steps does not result in preemption. *Diehr*, 450 U.S. at 187. Instead, like the claims found patentable in *DDR*, the asserted claims here do not preempt any fundamental principle but instead address challenges particular to computer-based systems—that is, a way of controlling CAS latency of an SDRAM.

C. Defendants Fail to Establish That Any Claim Lacks an Inventive Concept Under the Second *Alice* Step

Because the asserted claims of the '938 Patent are not directed to an abstract idea, the

[3] *See also Modern Telecom Sys. LLC v. Juno Online Servs., Inc.*, No. 14-0348, 2015 U.S. Dist. LEXIS 33835, at *21 (C.D. Cal. Mar. 17, 2015) ("Defendants have failed to demonstrate that the specific steps recited in the patents pre-empt all inventions concerning communicating between two modems."); *CQG*, 2015 U.S. Dist. LEXIS 22039, at *13 (holding that the defendant did not meet its burden of proof for § 101 because the "asserted claims similarly do not preempt every way of" practicing the alleged abstract idea); *Intellectual Ventures I LLC v. Mfrs. & Traders Trust Co.*, No. 13-1274-SLR, 2014 U.S. Dist. LEXIS 174725, at *25 (D. Del. Dec. 18, 2014) ("The claims do not preempt all applications of providing customized web pages, as they recite a specific method of customizing web pages based on user data.").

Court need not reach the second step of the *Alice* test. Nonetheless, Defendants also fail the second step, as they cannot establish that the asserted claims do not include "inventive concepts" worthy of patent eligibility.

In the second step of the *Alice* test, the Court must determine whether the claims contain "an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself." *Alice*, 134 S. Ct. at 2355 (internal quotation marks and citation omitted). The additional elements within the claim, apart from any abstract idea itself, must involve more than "well-understood, routine, conventional activit[ies] previously known to the industry." *Id.* (internal quotation marks omitted). But the application of an abstract idea to a "new and useful end" is patent-eligible. *Id.* at 2354.

Defendants predictably argue that all the computer components claimed in the '938 Patent are "well-understood, routine, and conventional." (Def. Br. at 16.) But the evidence cited by Defendants does not support this contention. As explained above, the asserted patent claims do not claim all usage of delay, or even all delay in an SDRAM. Instead, the patent claims only a very specific type of delay—that is, where a memory controller sends a command to an SDRAM in fewer than the required number of clock cycles between commands and the SDRAM delays that command internally to allow for sufficient time between commands. This claimed use of delay is only used in SDRAM devices and connected devices, such as memory controllers. This lack of preemption alone is sufficient grounds for the Court to deny Defendants' motion, even if they succeed to the second step of the test. *See Cal. Inst. of Tech. v. Hughes Commc'ns Inc.*, 59 F. Supp. 3d 974, 990 (C.D. Cal. 2014) ("preemption concern underlies both steps of the analysis.").

Defendants also point to the various disclosures in the specification that describe the components and process steps of the SDRAM to demonstrate that the elements of the invention are conventional. But as the law recognizes, "on some level, every invention can be built from conventional components." *Execware*, 2015 U.S. Dist. LEXIS 92127, at *52. The inquiry must focus on "the elements of the claim both individually ***and as an 'ordered combination'*** to see if there is an 'inventive concept.'" *Messaging Gateway Solutions*, 2015 U.S. Dist. LEXIS 49408, at *6 (denying motion to dismiss under § 101) (emphasis added); ***Cal. Inst.***, 59 F. Supp. 3d at 992 ("A combination of conventional elements may be unconventional."). In addition, the Supreme Court has recognized that "the 'novelty' of any element or steps in a process, or even of the process itself, is of no relevance in determining whether the subject matter of a claim falls within the § 101 categories of possibly patentable subject matter." *Diehr*, 450 U.S. at 188-89.[4] Consistent with this rule, the Federal Circuit has affirmed the patentability of a claim that included similar limitations to those in the '938 Patent—"recognizing," "retrieving," "generating," and "transmitting" data—where the claim limitations "recite[d] an invention that is not merely the routine or conventional use of the Internet" when viewed together as an ordered combination. *DDR*, 773 F.3d at 1259.

[4] Defendants have not raised an obviousness challenge to the '938 Patent in the present motion, nor filed a petition for *inter partes* review directed to the patent (as they have done in connection with each of the other patents-in-suit), seemingly acknowledging that its claims disclose an inventive concept. The '938 Patent states that a purpose of the invention is to "provide a synchronous DRAM (SDRAM) by which it is possible to perform a posted column access strobe (CAS) command." ('938 Patent at 2:1-5.) The patent then describes the claims and how a posted CAS command can be performed through the input and use of specific timing parameters in the SDRAM. (*Id*. at 2:7-5:67.) The dependent claims permit the input of certain values from outside the SDRAM. These specific parameters, their input, and their usage in this manner permit a user to input particular timing parameters and use an SDRAM that may delay commands internally through its determination of CAS latency. And even if such determination is not limited to occurring within the SDRAM (Defs.' Br. at 19), it is clear from the patent that such determination occurs in the context of a memory system. This solves a unique problem—the increase in memory bandwidth through the input and determination of SDRAM timing parameters. *See, e.g.*, *Intellectual Ventures I*, 2015 U.S. Dist. LEXIS 62601, at *36 (finding patent "clearly identifies and solves a unique problem in computer technology" and thus included an "inventive concept" under the second step of *Alice* test).

DDR is again highly instructive to the correct analysis here. Notwithstanding the defendant's failure in that case to satisfy the first *Alice* step, the Federal Circuit chose to complete the analysis and applied the second step, finding that even if the first step had been met, the second step was not. Noting that the patent claims at issue in *DDR* provided a technological solution that "is necessarily rooted in computer technology in order to overcome a problem specifically arising in the realm of computer networks," the court concluded that the claims added "significantly more" to any alleged abstract idea. *Id*. at 1255, 1257-58. Analyzing the "asserted claims . . . together as an ordered combination," the *DDR* court found that the claimed methods relating to composite websites do not simply apply a known business practice to the Internet, but "override[] the routine and conventional sequence of events" that normally occurs with known processes. *Id.* at 1258-59. Based on this analysis, the court concluded that the asserted claims "do not attempt to preempt every application of the idea of increasing sales by making two web pages look the same" and thus are patent eligible. *Id*. at 1259. Of course, "overrid[ing] the routine and conventional sequence of events" in the control of SDRAM is precisely what is claimed in the '938 Patent. *Id*. at 1258. (*See, e.g.*, '938 Patent at 2:1-5.)

The Federal Circuit's holding in *DDR* also relied on the fact that the claims did not use a computer simply to implement a previously well-known idea:

> As an initial matter, it is true that the claims here are similar to the claims in the cases discussed above in the sense that the claims involve both a computer and the Internet. ***But these claims stand apart because they do not merely recite the performance of some business practice known from the pre-Internet world along with the requirement to perform it on the Internet***.

DDR, 773 F.3d at 1257 (emphasis added). This critical distinction echoes the Supreme Court's decision in *Diehr*, where the asserted claims were related to a computer-implemented process for molding raw rubber. The patentee in *Diehr* had noted that while it was possible, by using "well-known time, temperature and cure relationships, to calculate by means of" an established

mathematical equation when to open a rubber molding press to remove the cured product, the industry had not been able to measure precisely the temperature inside the press, "thus making it difficult to do the necessary computations to determine cure time." 450 U.S. at 175, 178. The patentee's invention solved this problem by "constantly measuring the actual temperature inside the mold" and feeding the temperature measurements "into a computer which repeatedly recalculates the cure time" through use of a known mathematical equation and then "signals a device to open the press" at the proper time. *Id.* at 178-79. The Supreme Court found that the patentee's invention was patent-eligible subject matter and that the claim did not preempt the use of "a well-known mathematical equation" but only foreclosed use of that equation when applied in conjunction with other steps. *Id*. at 187. These steps in the claim "transform[ed] or reduc[ed] an article to a different state or thing," making the claim the kind of invention deserving protection. *Id*. at 192.

> The *Alice* court commented on the *Diehr* reasoning with approval:
>
> > The claim employed a "well-known" mathematical equation, but it used that equation in a process designed to solve a technological problem in "conventional industry practice." The invention in *Diehr* used a "thermocouple" to record constant temperature measurements inside the rubber mold—something "the industry ha[d] not been able to obtain." The temperature measurements were then fed into a computer, which repeatedly recalculated the remaining cure time by using the mathematical equation. These additional steps, we recently explained, "transformed the process into an inventive application of the formula." ***In other words, the claims in Diehr were patent eligible because they improved an existing technological process, not because they were implemented on a computer.***

Alice, 134 S. Ct. at 2358 (emphasis added). Applying these holdings to the asserted claims of the '938 Patent confirms that they are patent eligible.

In contrast, Defendants' cited authority is inapplicable here just as it was in connection with the first *Alice* step. For example, in *Content Extraction*, the claims of the patent were not directed to computer memory but to an ATM machine that "1) collect[s] data, 2) recogniz[es]

certain data within the collected data set, and 3) stor[es] that recognized data in a memory." 776 F.3d at 1347. Nothing in the claimed ATM machine deviated from conventional processing steps, unlike the '938 Patent, which claims the determination of CAS latency based on whether delay needs to be added to commands from the memory controller to the SDRAM. Similarly, Defendants' remaining cited cases, simply because some of them recite the word "memory," are unrelated to the specific claims at issue here (and Defendants never establish any such connection).

Where a patent "clearly identifies and solves a unique problem in computer technology," just as the '938 Patent does, it constitutes eligible subject matter. *Intellectual Ventures I*, 2015 U.S. Dist. LEXIS 62601, at *37 (recommending patent claims be found patent eligible where patent claims were "directed to a system that solves a unique problem in the computer field allowing the business user dynamic access to varying types of business documents formatted in various types of specialized, computer language syntax"); *see also Messaging Gateway Solutions*, 2015 U.S. Dist. LEXIS 49408, at *16 (denying Rule 12(c) motion for invalidity where patent claim "specifies how an interaction between a mobile phone and a computer is manipulated in order to achieve a desired result which overrides conventional practice").

Defendants make a final stab at satisfying the second step of the *Alice* test by arguing that the "determining" step in one of the claims of the '938 Patent could be performed mentally or with pen and paper. (Defs.' Br. at 19.) But performing one step of a claim is far from practicing the claim. Further, the "proffered pen and paper implementation of the claim is not sufficiently analogous to the claimed invention, because it does not accomplish the goals of the invention or produce its actual effect." *Execware*, 2015 U.S. Dist. LEXIS 92127, at *47. For example, in *Execware*, the court noted that performing the requirements of the claim by pen and paper

defeated the purposes of the invention, such as streamlining a user's interaction with a computer database. *Id.* at *47-49; *see also Card Verification Solutions, LLC v. Citigroup Inc.*, No. 13 C 6339, 2014 WL 4922524, at *4 (N.D. Ill. Sept. 29, 2014) (denying motion to dismiss under § 101 where an "entirely plausible interpretation of the claims include a limitation requiring . . . software that could not be done with pen and paper"); *Cal. Inst.*, 59 F. Supp. 3d at 995 ("Pen-and-paper analysis can mislead courts into ignoring a key fact: although a computer performs the same math as a human, a human cannot always achieve the same results as a computer."). In this case, using pen and paper to determine the CAS latency of an SDRAM would not enable the SDRAM to work properly, which is the purpose of the invention. ('938 Patent at 2:1-6.)

D. Defendants Fail to Show All Asserted Claims Are Invalid

As a final matter, it is improper, as Defendants have done here, to simply cite to one representative claim and argue that all the asserted claims are invalid. In particular, Defendants treat all of the asserted claims of the '938 Patent as if they are the same as claim 19, and then assert without factual support that "[a]ll asserted claims are substantially the same for § 101 purposes and need not be considered separately." (Defs.' Br. at 12 n.6). But, barring any agreement between the parties to the contrary, a movant must show invalidity of all asserted claims rather than any set of "representative" claims. *See Content Extraction,* 776 F.3d at 1348 (reviewing all asserted claims under § 101 challenge); *StoneEagle Servs., Inc. v. Pay-Plus Solutions, Inc.*, No. 8:13-CV-2240-T-33MAP, 2015 WL 518852, at *5 (M.D. Fla. Feb. 9, 2015) ("A party challenging the validity of a claim, absent a pretrial agreement or stipulation, must submit evidence supporting a conclusion of invalidity of each claim the challenger seeks to destroy.") (internal citations and quotation marks removed). This is particularly true here, where Defendants have cited Samsung's claim construction brief, the technology tutorial transcript, and the Court's claim construction order, which make clear that the preamble of claim 19 is ***not*** a

limitation on claim scope while the preambles of the other asserted independent claims ***are*** limiting. This results in fundamental differences in scope between the independent claims that Defendants fail to even mention, much less address, making their motion applicable (at best) only to claim 19.

IV. CONCLUSION

The '938 Patent claims an innovative method and system for increasing the bandwidth of memory controllers by controlling specific timing values within an SDRAM. The claims are specifically rooted in computer technology (memory systems including SDRAM) and solve a specific problem (allowing commands to be sent and handled early from a device such as a memory controller to an SDRAM). The claims are not abstract, as Defendants acknowledged repeatedly in the technology tutorial hearing before the Court, and claim inventive concepts that are tied to memory systems. Most importantly, the claims do not seek to preempt a fundamental practice—the fundamental policy consideration behind the law of § 101.

Samsung's contributions to the field of memory systems should not be eliminated by Defendants' mischaracterization of the patent claims and misapplication of the law. Samsung respectfully requests that Defendants' motion be denied in its entirety.

Dated: August 25, 2015

SAMSUNG ELECTRONICS CO., LTD.
SAMSUNG ELECTRONICS AMERICA, INC.
BY COUNSEL

By: /s/ Robert W. McFarland
Robert W. McFarland

Robert W. McFarland (VSB No. 24021)
McGuireWoods LLP
101 W. Main Street, Suite 9000
Norfolk, Virginia 23510
Telephone: (757) 640-3716

Facsimile: (757) 640-3966
E-mail: rmcfarland@mcguirewoods.com

Darin W. Snyder (Pro Hac Vice)
Alexander B. Parker (Pro Hac Vice)
Elysa Q. Wan (Pro Hac Vice)
O'Melveny & Myers LLP
Two Embarcadero Center, 28th Floor
San Francisco, CA 94111
E-mail: dsnyder@omm.com
E-mail: aparker@omm.com
E-mail: ewan@omm.com

Vision L. Winter (Pro Hac Vice)
Ryan K. Yagura (Pro Hac Vice)
O'Melveny & Myers LLP
400 South Hope Street, 18th Floor
Los Angeles, CA 90071
E-mail: vwinter@omm.com
E-mail: ryagura@omm.com

Brian C. Riopelle (VSB No. 36454)
McGuireWoods LLP
One James Center 901 E. Cary Street
Richmond, VA 23219
Telephone: (804) 775-1084
Facsimile: (804) 698-2150
E-mail: briopelle@mcguirewoods.com

Attorneys for Plaintiffs Samsung Electronics Co., Ltd. and Samsung Electronics America, Inc.

CERTIFICATE OF SERVICE

I hereby certify that on August 25, 2015, a true and correct copy of the foregoing was filed electronically using the CM/ECF system. As such, this document was served on all counsel who have consented to electronic service, including as follows:

Dabney Jefferson Carr, IV
Troutman Sanders LLP
1001 Haxall Point
Richmond, VA 23219
Telephone: 804-697-1238
Facsimile: 804-698-5119
Email: Dabney.carr@troutmansanders.com

Maximillian Grant
Latham & Watkins LLP
555 Eleventh Street, NW, Suite 1000
Washington, DC 20004
Telephone: 202-637-2200
Facsimile: 202-637-2201
Email: max.grant@lw.com

Clement Joseph Naples
Latham & Watkins LLP
885 Third Avenue, 25th Floor
New York, NY 10022
Telephone: 212-906-1200
Facsimile: 212-906-1201
Email: clement.naples@lw.com

Counsel for NVIDIA Corporation, Old Micro, Inc. f/k/a Velocity Micro, Inc., and Velocity Holdings, LLC

/s/ *Robert W. McFarland*
Robert W. McFarland (VSB No. 24021)
MCGUIREWOODS LLP
101 West Main Street, Suite 9000
Norfolk, Virginia 23510
Telephone: (757) 640-3716
Facsimile: (757) 640-3966
E-mail: rmcfarland@mcguirewoods.com

Attorney for PLAINTIFFS Samsung Electronics Co., Ltd., and Samsung Electronics America, Inc.